

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
15 January 2004 (15.01.2004)

PCT

(10) International Publication Number
WO 2004/004572 A1

(51) International Patent Classification⁷: **A61B 8/00**,
8/12, 8/14, 17/20, A61H 1/00, 1/02, 5/00

(21) International Application Number:
PCT/US2003/021140

(22) International Filing Date: 3 July 2003 (03.07.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/394,392 8 July 2002 (08.07.2002) US

(71) Applicant (for all designated States except US):
TRANSURGICAL, INC. [US/US]; 220 Belle Meade
Road, Suite #2, Setauket, NY 11733 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **LOPATH, Patrick,**
David [US/CA]; 3611 University Drive, Suite 45, Durham,
NC 27707 (US).

(74) Agents: **MILLET, Marcus, J. et al.**; Lerner, David, Lit-
tenberg, Krumholz & Méntlik, LLP, 600 South Avenue
West, Westfield, NJ 07090 (US).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC,
SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA,
UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

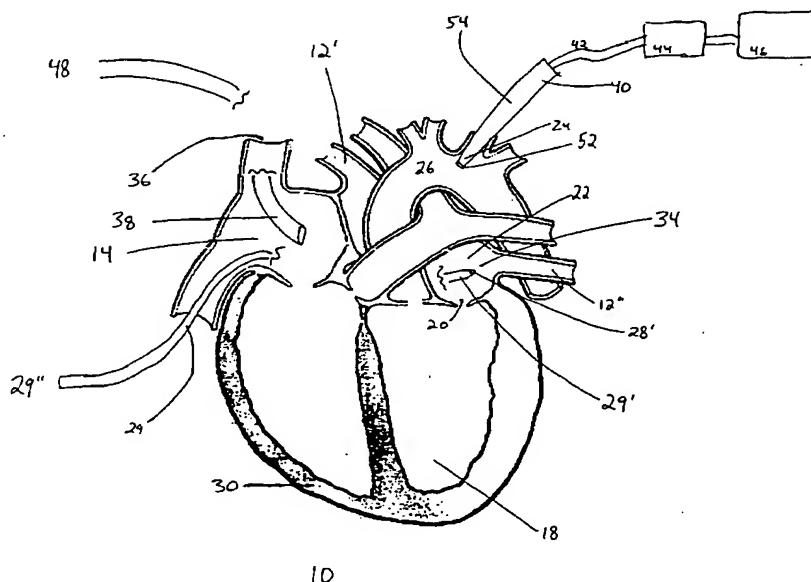
(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments

[Continued on next page]

(54) Title: **CARDIAC ABLATION USING MICROBUBBLES**



(57) Abstract: In a cardiac ablation procedure, ultrasonic energy is emitted from an ultrasonic ablation device (28) and is focused on myocardial tissue (30) within the wall of the heart or within the wall of a blood vessel connected to the heart (10). Ultrasound attenuation of the cardiac tissue is selectively increased by introducing microbubbles into the circulatory system of the subject so that the microbubbles enter the coronary arteries and pass into the myocardial tissue.